UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,189	11/13/2001	Srinivas Gutta	US010576	3037

24737 7590 03/02/2007
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
JARRETT, SCOTT L	
ART UNIT	PAPER NUMBER
3623	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/014,189	GUTTA ET AL.
	Examiner	Art Unit
	Scott L. Jarrett	3623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1 .114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1 .17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.1 14, and the fee set forth in 37 CFR 1 .17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.1 14. Applicant's submission filed on December 5, 2006 has been entered.

Applicant's amendment amended claims 1-23. Currently Claims 1-23 are pending.

Response to Amendment

2. The 35 U.S.C. 101 Rejection of Claims 1-15 is withdrawn in response to applicant's amendments to independent claims 1 and 10 wherein Applicant's positively recited in the body of the claims providing a recommendation to a user.

The 35 U.S.C. 101 Rejection of Claims 16-23 is maintained wherein the recitation "providing a recommendation to a user" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand

alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

The Double Patenting Rejection of Claims 1, 10, 16 and 22-23 over U.S. Patent No. 6,801,917 is withdrawn.

Response to Arguments

3. Applicant's arguments filed December 5, 2006 have been fully considered but they are not persuasive. Specifically Applicant's argue that:

- there is no motivation or suggestion to combine the Datta et al., Symbolic Nearest Mean Classifiers (AAAI 1997) in view of Datta et al., Learning Symbolic Prototypes (ICML 1997; Datta/Kibler) references (Remarks, Paragraph 3, Page 9);

- there is no reasonable expectation of success ((Remarks, Paragraph 3, Page 9); and

- that the prior art of record, specifically Datta et al. and Data/Kibler do not teach or suggest all of the claim limitations, specifically the references do not teach the limitation that "for at least one cluster, a given symbolic attribute has more than one value such that more than one mean symbolic value is determined for that symbolic attribute" as claimed and further arguing that the prior art teaches away from this claim limitation (Remarks: Paragraphs 1-2, Page 10; Paragraphs 1-3, Page 11).

As an initial matter the examiner wishes to briefly review several paragraphs, from the published version of the instant application (U.S. Patent Publication No.

2003/0097186), which are particularly relevant to understanding/interpreting the recited limitation (Paragraphs 0009-0010, 0024, 0044, 0046, 0048, 0052, emphasis added).

> [0010] A mean computation routine is also disclosed to compute the *symbolic mean of a cluster.* For a feature-based mean computation, the distance computation between two items is performed on the feature (symbolic attribute) level and *the resultant cluster mean is made up of feature values drawn from the **examples** (programs) in the cluster.* The resulting cluster mean may therefore be *a "hypothetical" television program, with the individual feature values of this hypothetical program drawn from any one of the examples.* Thus, ***any feature value** that exhibits the minimum variance is selected to represent the **mean of that feature**.*

> [0046] Computationally, each symbolic feature value in J is ***tried*** as x.sub..mu. and *the symbolic value that minimizes the variance* **becomes the mean** *for the symbolic attribute* under consideration in cluster J. There are two types of mean computation that are possible, namely, show-based mean and feature-based mean.

> [0052] The exemplary mean computation routine 500 discussed above *characterizes the mean of a cluster using a single feature value for each possible feature* (whether in a feature-based or program-based implementation).

It has been found, however, the relying on only one feature value for each feature during the mean computation often leads to improper clustering, as the mean is no longer a representative cluster center for the cluster. In other words, it may not be desirable to represent a cluster by only one program, but rather, *multiple programs the represent the mean or multiple means may be employed to represent the cluster.* Thus, in a further variation, *a cluster may be represented by multiple means or multiple feature values for each possible feature.* Thus, *the N features* (for feature-based symbolic mean) *or N programs* (for program-based symbolic mean) *that minimize the variance are selected during step 530, where N is the number of programs used to represent the mean of a cluster.*

As recited in the Applicant's disclosure the mean of a cluster is determined by trying *each* potential symbolic value for *each* symbolic attribute (feature) until the symbolic value that minimizes the variance is found, selecting that symbolic value for that symbolic attribute to be the mean for that symbolic attribute of the cluster, repeating this process until each of the symbolic attributes is represented by a mean symbolic attribute and then representing the cluster as a collection (vector) of N symbolic mean values one for each of the N symbolic attributes in the cluster (i.e. the collection of N symbolic means for the symbolic values represents either an actual or "hypothetical program"/example/prototype).

Datta et al. and Datta/Kibler teach a method for clustering data having symbolic features wherein for at least one cluster, a given symbolic (nominal) attribute has more than one value (i.e. color{red, blue, purple}, Datta/Kibler Last Paragraph, Page 3) such that more than one mean symbolic value is determined for that symbolic attribute.

- Datta et al.:

"Computationally each symbolic value will be tried as xu and the symbolic value that minimizes the variance will become the mean for the symbolic attribute in cluster J.", Column 2, Paragraphs 2-3, Page 2

essarily be equal. In addition, we have the constraint that the mean of a symbolic attribute must be one of its possible values. For numeric data the mean is the value that minimizes the variance. We generalize this notion to deal with symbolic attributes as well. The class prototypes learned by the minimum-distance classifier can be considered as clusters of examples with the *prototype* described by the mean of the examples in the cluster.

We define the mean of a cluster by finding the value of x_μ that minimizes the variance,

$$Var(J) = \sum_{i \in J} (x_i - x_\mu)^2,$$

where J is a cluster of examples (for minimum-distance classifier, the cluster is the group of examples of the same class) and x_i is a symbolic value for example i. x_μ will be the best constant approximation for the distribution of symbolic values in J in the same way that the mean of real-value attributes is the best constant approximation for the values. Computationally, each symbolic value will be tried as x_μ and the symbolic value that minimizes the variance will become the mean for the symbolic attribute in cluster J.

- Datta/Kibler:

"Computationally, *each symbolic value will be **tried** as u* and the symbolic value that minimizes the variance will become the mean for J…We define the mean of a *set of*

examples, S, to be the vector <A1u....We call this vector the prototype for S."

Paragraphs 1-3, Page 4, emphasis added

> attributes as well. We define the mean of a set of symbolic values by finding the value of μ minimizing the variance, that is
>
> $$\mu = argmin(\sum_{v \in J} D(v, \mu)),$$
>
> where J is the set of values and v is a symbolic value in J. μ will act as the best constant approximation for the symbolic values in J similar to the mean for real values. Computationally, each symbolic value will be tried as μ and the symbolic value that minimizes the variance will become the mean for J. We define the mean of a set of examples, S, to be the vector $< A1_\mu, A2_\mu, ...An_\mu >$ where Ai_μ denotes the mean of the ith attribute. We call this vector the ***prototype*** for S.
>
> We have developed an algorithm called SNM (Symbolic Nearest Mean) that has a more robust method for determining distances between symbolic values. SNM uses the MVDM and the definition of mean described above. SNM learns a prototype for each class, classifies examples by finding the closest prototype using Euclidean distance, and predicts the prototype's class.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, both the Datta et al. (Piew Datta and Dennis Kibler, presented at AAI 1997) and Data/KillberDatta (Piew Datta and Dennis Kibler, presented at ICML 1997) teach the *same* method for classifying (partitioning, clustering) symbolic data using the Symbolic Nearest Mean

(SNM) and Symbolic Nearest Mean with Clustimer (SNMC, a modification to the SNM technique) techniques wherein each article/presentation provides features and/or characteristics inherent in the SNM and SNMC developed by Datta and Kibler. Further Datta/Kibler teaches that learning more than one prototype per class would allow SNMC to represent distant and disjoint groups of examples within classes (Datta/Kibler: Last Paragraph, Page 6) wherein SNMC, using well known k-means clustering for unsupervised learning, increasing classification (partitioning) accuracy (Datta et al.: Abstract).

It is noted that the applicant did not challenge the officially noticed facts cited in the previous office action(s) therefore those statement(s) as presented are herein after prior art. Specifically it has been established that it was old and well known in the art at the time of the invention:

- to classify/identify items such as television programs, content and/or products using of well-known pattern-recognition methods including but not limited to: value difference measures/metrics, nearest-neighbor, classifiers, similarity/instance-based methods, lazy learning, or the like; wherein these methods/systems are utilized for things such as recommending items to users; and
- to automate manual methods.

Title

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: System and Method for Recommending Items to a User Based on the Symbolic Mean of a Cluster Items.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 16-23 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding Claims 16-23, a claimed invention to be statutory, the claimed invention must produce a useful, concrete, and tangible result.

In the present case, the method for identifying one or more mean items merely computes one or more mathematical values (variances, distances, differences), selects symbolic values for one or more symbolic attributes of items (item features/characteristics) and groups (organizes, clusters) items based on the mathematical values/symbolic attributes/values, while the compilation of data may have some have some real world value (i.e. utility/usefulness) there is no requisite functionality present to satisfy the practical application requirement nor are there any "acts" which transform the data and/or cause a physical transformation to occur outside the computer (i.e. not concrete or tangible) therefore the invention as claimed does not produce a useful, concrete, *and* tangible result.

Merely claiming nonfunctional descriptive material, **i.e.**, abstract ideas, stored in a computer-readable medium, in a computer, on an electromagnetic carrier signal does not make it statutory. See Diamond v. Diehr**,** 450 U.S. 175, 185-86, 209 USPQ 1, 7-8 (1981) (noting that the claims for an algorithm in Benson were unpatentable as abstract

ideas because "[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer."). Such a result would exalt form over substance. In re Sarkar, 588 F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978) ("[E]ach invention must be evaluated as claimed; yet semantogenic considerations preclude a determination based solely on words appearing in the claims. In the final analysis under 101, the claimed invention, as a whole, must be evaluated for what it is.") (Abele, 684 F.2d 902, 907, 214 USPQ 682, 687(CCPA 1982)). See also In re Johnson, 589 F.2d 1070, 1077, 200 USPQ 199, 206 (CCPA 1978) ("form of the claim is often an exercise in drafting"). Thus, nonstatutory music is not a computer component and it does not become statutory by merely recording it on a compact disk. Protection for this type of work is provided under copyright law.

A useful, concrete and tangible result, for example, might be achieved through the utilization of the grouped/cluster items to recommend television programs to users, a real-world/actual effect.

Provisional Double Patenting

7. Claims 1-15 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 6 and 15 of copending Application No. 10/014180. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Regarding Claims 1 and 10 of this application conflict with claims 6 and 15 of Application No. 10/014180. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

8. Claims 1-23 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-20 of copending Application No. 10/014,192. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

9. Claims 1-22 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 10 and 17 of copending Application No. 10/183,762. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Regarding Claims 1, 10, 16 and 22 of this application conflict with claims 10 and 17 of Application No. 10/183,762. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrmantraut et al., The Personal Electronic Program Guide (1996) in view of Datta et al., Symbolic Nearest Mean Classifiers (AAAI 1997) and further in view of Datta et al., Learning Symbolic Prototypes (ICML 1997; Datta/Kibler).

Regarding Claim 1 Ehrmantraut et al. teach a system and method for providing recommendations to users based at least in part on clusters (data partitioning, cluster analysis; Column 1, Paragraphs 1-2, Page 248; Column 2, Bullet 2, Page 248; Column 1, Paragraph 1, Page 249; Figures 3-4).

While Ehrmantraut et al. teaches the utilization of any of a plurality of well known clustering methods/techniques to partition the data/form the clusters (Page 248; Figure 4) Ehrmantraut et al. does not expressly teach partitioning includes identifying one or more mean items as claimed.

Datta et al. teach a method for partitioning (identifying, segmenting, characterizing, classifying, categorizing, etc.) one or more mean items for a plurality of items, J, each of the items having at least one symbolic (categorical, non-metric, non-numeric, Boolean, binary, etc.) attribute (feature, characteristic, etc.), each symbolic attribute having at least one possible value and further comprising:

- computing (determining, calculating, etc.) a variance (distance, difference, etc.) of the plurality of items, J, for each of the possible symbolic values, x_u, for each of the symbolic attributes ("Distances between Symbolic Attribute Values", Columns 2-3, Page 2);

- selecting for each of the symbolic attributes (item features/characteristics) at least one symbolic value, x_u, that minimizes the variance as the mean symbolic value ("The Mean of Symbolic Attributes", Column 2, Page 2); and

- wherein for at least one cluster a given symbolic attribute has more than one value (Column 1, Last Paragraph, Page 2; "The Mean of Symbolic Attributes", Column 2, Page 2).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for recommending items to users (personalized electronic program guide) as taught by Ehrmantraut et al., with its utilization of well known cluster analysis techniques/methods, would have benefited from utilizing any of a plurality of clustering algorithms including but not limited to the Symbolic Nearest Mean and/or Symbolic Nearest Mean with Clustering in order to identify and recommend television

programs to users based at least in part of clusters/partitions having one or more mean items in view of the teachings of Datta et al.; the resultant system and method enabling recommendations to be made using symbolic attributes.

Neither Ehrmantraut et al. nor Datta et al. expressly teach that for at least one cluster a given symbolic attribute has more than one value such that more than one mean symbolic value is determined for the symbolic attribute as claimed.

Datta/Kibler teach that for at least one cluster a given symbolic attribute has more than one value such that more than one mean symbolic value is determined for the symbolic attribute (determining a mean for each symbolic attribute creating a prototype for the cluster/class/group; Last Paragraph, Page 3; Paragraphs 1-3, Page 4; i.e. “represent a cluster by only one program, but rather, multiple programs the represent the mean or multiple means may be employed to represent the cluster. Thus, in a further variation, a cluster may be represented by multiple means or multiple feature values for each possible feature.”, Paragraph 0052 of the published application, U.S. 2003/0097186) in an analogous art of partitioning a plurality of items into clusters utilizing one or more mean items for the purposes of learning more than one prototype for each class (cluster, group, category, etc.; Paragraph 2, Page 2) and/or determining a “more robust” distance measures between symbolic values (Paragraph 2, Page 4).

It would have been obvious to one skilled in the art at the time of the invention that the method for partitioning a plurality of items into clusters by identifying one or more mean items for a plurality of items having at least one symbolic value as taught by the combination of Ehrmantraut et al. and Datta et al. would have benefited from utilizing more than one value for a symbolic attribute such that more than one mean symbolic value is determined for the symbolic attribute in view of the teachings of Datta/Kibler; the resultant method purposes of learning more than one prototype for each class (cluster, group, category, etc.; Datta/Kibler: Paragraph 2, Page 2) and/or determining a "more robust" distance measures between symbolic values (Datta/Kibler: Paragraph 2, Page 4).

Regarding Claims 2 and 11 Datta et al. teach a method for identifying one or more mean items wherein the mean symbolic value for each symbolic attribute comprises a mean of the plurality of items ("The Mean of Symbolic Attributes", Column 2, Page 2).

Regarding Claims 3 and 14 Datta et al. teach a method for identifying one or more mean items wherein the symbolic attributes comprises one or more hypothetical items (tentative, potential, probable, projected, sample, test, example, training, etc.; Column 2, Paragraph 1, Page 2; "Learning Multiple Prototypes", Column 1, Page 4).

Regarding Claims 4 and 12 Datta et al. teach a method for identifying one or more items further comprising assigning a label (class, descriptor, text, name, tag, etc.) to the plurality of items using at least one symbolic value from the at least one of the item means ("Learning Multiple Prototypes", Column 1, Page 4; "K-Means Clustering", Columns 1-2, Page 4).

Regarding Claims 5 and 13 Datta et al. teach a system and method for identifying one or more items wherein the plurality of items are a cluster (grouping, collection, set, etc.) of similar items ("K-Means Clustering", Columns 1-2, Page 4; Figures 1a, 1b).

Regarding Claim 6 Ehrmantraut et al. teach a system and method for providing a recommendation to a user wherein the recommended items are programs (Abstract).

Regarding Claim 7-8 Ehrmantraut et al. does not expressly teach that the recommended items include content or products as claimed.

Official notice is taken that classifying/identifying items such as television programs, content and/or products using of well-known pattern-recognition methods including but not limited to: value difference measures/metrics, nearest-neighbor, classifiers, similarity/instance-based methods, lazy learning, or the like, is old and very

well known wherein these methods/systems are utilized for things such as recommending items to users.

It would have been obvious to one skilled in the art at the time of the invention that the method for identifying one or more mean items for a plurality of items as taught by Ehrmantraut et al. would have been utilized to identify/classify any of a plurality of items including but not limited to programs, products and/or content in view of the teachings of official notice.

Further it is noted that while Ehrmantraut et al. does not expressly teach the specific nature of the items (content, products, etc.) as recited in claims 7-8; these differences are only found in the non-functional descriptive material and are not functionally involved in the steps recited nor do they alter the recited structural elements. The recited method steps would be performed the same regardless of the specific nature of the items being identified/classified. Further, the structural elements remain the same regardless of the specific nature of the items being identified/classified. Thus, this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, *see In re Gulack, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); In re Lowry, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994); MPEP 2106.*

Regarding Claims 9 and 15 Datta et al. teach a system and method for partitioning a plurality of items by identifying one or more items wherein the variance (distance, difference, similarity measure, etc.) is computed as follows:

$$Var(J) = \sum_{i \in J} (xi - xu)^2$$

where J is a cluster of items from the same class, x_i is a symbolic feature value from item i and x_u is an attribute value from one of the items in J such that it minimizes *Var(J)* ("The Mean of Symbolic Attributes", Column 2, Page 2).

12. Claims 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Datta et al., Symbolic Nearest Mean Classifiers (AAAI 1997) in view of Datta et al., Learning Symbolic Prototypes (ICML 1997; Datta/Kibler, as cited in the PTO-892 form mailed March 13, 2006).

Regarding Claims 16 and 22-23 Datta et al. teach a method for partitioning a plurality of items by identifying one or more mean items for a plurality of items, J, each of the items having at least one symbolic attribute (feature, characteristic, etc.), each symbolic attribute having at least one possible value and further comprising:

- computing (determining, calculating, etc.) a variance (distance, difference, etc.) of the plurality of items, J, for each of the possible symbolic values, x_u, for each of the symbolic attributes ("Distances between Symbolic Attribute Values", Columns 2-3, Page 2);

- selecting for each of the symbolic attributes (item features/characteristics) at least one symbolic value, x_u, that minimizes the variance as the mean symbolic value ("The Mean of Symbolic Attributes", Column 2, Page 2); and

- wherein for at least one cluster a given symbolic attribute has more than one value (Column 1, Last Paragraph, Page 2; "The Mean of Symbolic Attributes", Column 2, Page 2).

Datta et al. does not expressly teach that for at least one cluster a given symbolic attribute has more than one value such that more than one mean symbolic value is determined for that symbolic attribute as claimed.

Datta/Kibler teach that for at least one cluster a given symbolic attribute has more than one value such that more than one mean symbolic value is determined for that symbolic attribute (determining a mean for each symbolic attribute creating a prototype for the cluster/class/group; Last Paragraph, Page 3; Paragraphs 1-3, Page 4; i.e. "represent a cluster by only one program, but rather, multiple programs the represent the mean or multiple means may be employed to represent the cluster. Thus, in a further variation, a cluster may be represented by multiple means or multiple feature values for each possible feature.", Paragraph 0052 of the published application, U.S. 2003/0097186) in an analogous art of partitioning a plurality of items into clusters utilizing one or more mean items for the purposes of learning more than one prototype for each class (cluster, group, category, etc.; Paragraph 2, Page 2) and/or determining a "more robust" distance measures between symbolic values (Paragraph 2, Page 4).

It would have been obvious to one skilled in the art at the time of the invention that the method for partitioning a plurality of items into clusters by identifying one or more mean items for a plurality of items having at least one symbolic value as taught by Datta et al. would have benefited from utilizing more than one value for a symbolic attribute such that more than one mean symbolic value is determined for the symbolic

attribute in view of the teachings of Datta/Kibler; the resultant method purposes of learning more than one prototype for each class (cluster, group, category, etc.; Datta/Kibler: Paragraph 2, Page 2) and/or determining a "more robust" distance measures between symbolic values (Datta/Kibler: Paragraph 2, Page 4).

While Datta et al. teach a *method* for identifying one or more mean items for a plurality of items Datta et al. does not expressly teach that a *system* and/or article of manufacture is utilized to perform/execute the method as claimed.

It was known at the time of the invention that merely providing an automatic means to replace a manual activity which accomplishes the same result is not sufficient to distinguish over the prior art, In re Venner, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). For example, simply automating the step(s) of computing a variance and selecting for each symbolic attribute a symbolic value gives you just what you would expect from the manual step as shown in Datta et al. In other words there is no enhancement found in the claimed steps. The claimed system only provides automation for the manual activity. The end result is the same as compared to the manual method. A computer can simply iterate the steps faster. The result is the same.

It would have been obvious to a person of ordinary still in the art at the time of the invention to automate the method for identifying one or more mean items for a plurality of items as taught by the combination of Datta et al. and Datta/Kibler; the

resultant system/method being capable of performing the methods steps faster and/or more efficiently, which is purely known, and an expected result from automation of what is known in the art.

Regarding Claim 17 Datta et al. teach a method for identifying one or more mean items wherein the mean symbolic value for each symbolic attribute comprising a mean of the plurality of items ("The Mean of Symbolic Attributes", Column 2, Page 2).

Regarding Claim 18 Datta et al. teach a method for identifying one or more mean items wherein the symbolic attributes comprises one or more hypothetical items (tentative, potential, probable, projected, sample, test, example, training, etc.; Column 2, Paragraph 1, Page 2; "Learning Multiple Prototypes", Column 1, Page 4).

Regarding Claim 19 Datta et al. teach a method for identifying one or more items further comprising assigning a label (class, descriptor, text, name, tag, etc.) to the plurality of items using at least one symbolic value from the at least one of the item means ("Learning Multiple Prototypes", Column 1, Page 4; "K-Means Clustering", Columns 1-2, Page 4).

Regarding Claim 20 Datta et al. teach a method for identifying one or more items wherein the plurality of items are a cluster (grouping, collection, set, etc.) of similar items ("K-Means Clustering", Columns 1-2, Page 4; Figures 1a, 1b).

Regarding Claim 21 Datta et al. teach a method for identifying one or more items wherein the variance is computed as follows:

$$Var(J) = \sum_{i \in J} (xi - xu)^2$$

where J is a cluster of items from the same class, x_i is a symbolic feature value from item i and x_u is an attribute value from one of the items in J such that it minimizes *Var(J)* ("The Mean of Symbolic Attributes", Column 2, Page 2).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Vaithyanathan et al., U.S. Patent No. 5,819,258, teach a system and method for partitioning a plurality of items into clusters of similar items.

- Castelli et al., U.S. Patent No. 5,940,825, teach a system and method for clustering/partitioning items into clusters of similar items based on similarity measures wherein the items comprising multidimensional feature/attribute values.

- Herz et al., U.S. Patent No. 6,088,722, teach a system and method for recommending television programs to users by matching user and content (program) vectors.

- Killian, EP0854645 A2, teach a system and method for recommending television programs to users (electronic program guide).

- Lumpkin et al., Relating Television Preference Viewing to Shopping Orientations, Life Styles, and Demographics (1982), teach method of partitioning (grouping) items into clusters of similar items (e.g. consumers, television programs) wherein television programs, for example, are classified using multiple attributes.

Lumpkin et al. further teach representing similar items, identified via cluster analysis, using multiple attributes (realistic, feminine) and or programs (Mash, Three's Company, etc.; "Consumer choices among television programs may be based on a multiplicity of attributes rather than a single attribute. Thus it appears to be more useful

to move to a multidimensional view of viewing behavior using both perceptions and preferences of the individual toward the television program.").

- Reinke, Symbolic Clustering (1991), teaches a method for partitioning items through the application of cluster analysis of symbolic attributes.

- Liu et al., Metrics for Nearest Neighbor Discrimination with Categorical Attributes (1998), teach of partitioning similar items into groups based on well known distance measures (VDM, MVDM, etc.).

- El-Sonbaty et al., Fuzzy Clustering for Symbolic Data, teach a method for clustering/partitioning symbolic data wherein "A cluster center can be formed as a group of features..."

- Radev et al., Centroid-based summarization of multiple documents (2000), teach a method for partitioning items into similar clusters utilizing cluster centroids.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott L. Jarrett whose telephone number is (571) 272-7033. The examiner can normally be reached on Monday-Friday, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hafiz Tariq can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SJ
2/27/07

Scott L Jarrett
Asst. Patent Examiner, AU 3623